STUDY OF TISSUES ORGAN BATH

Done by:

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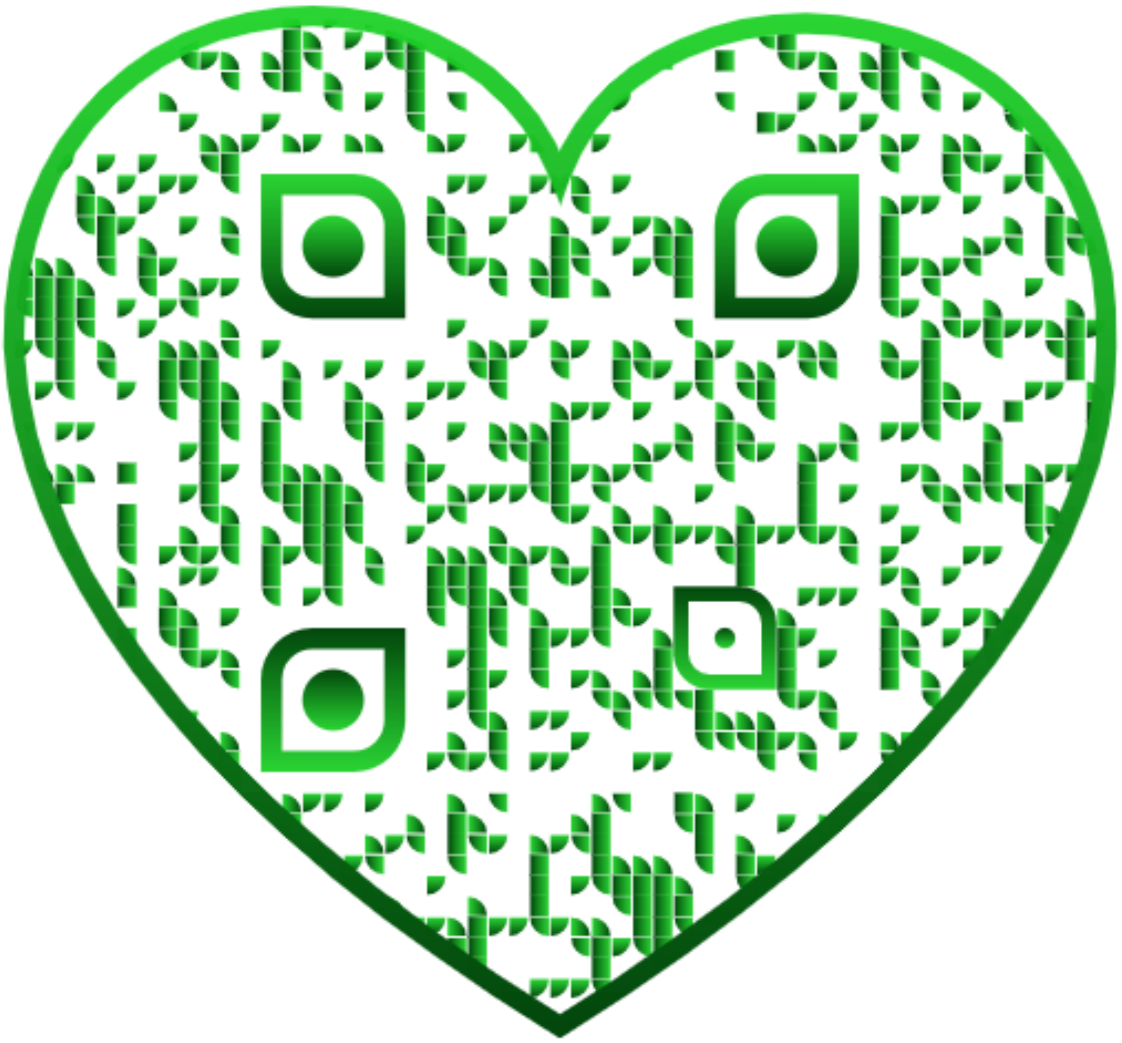


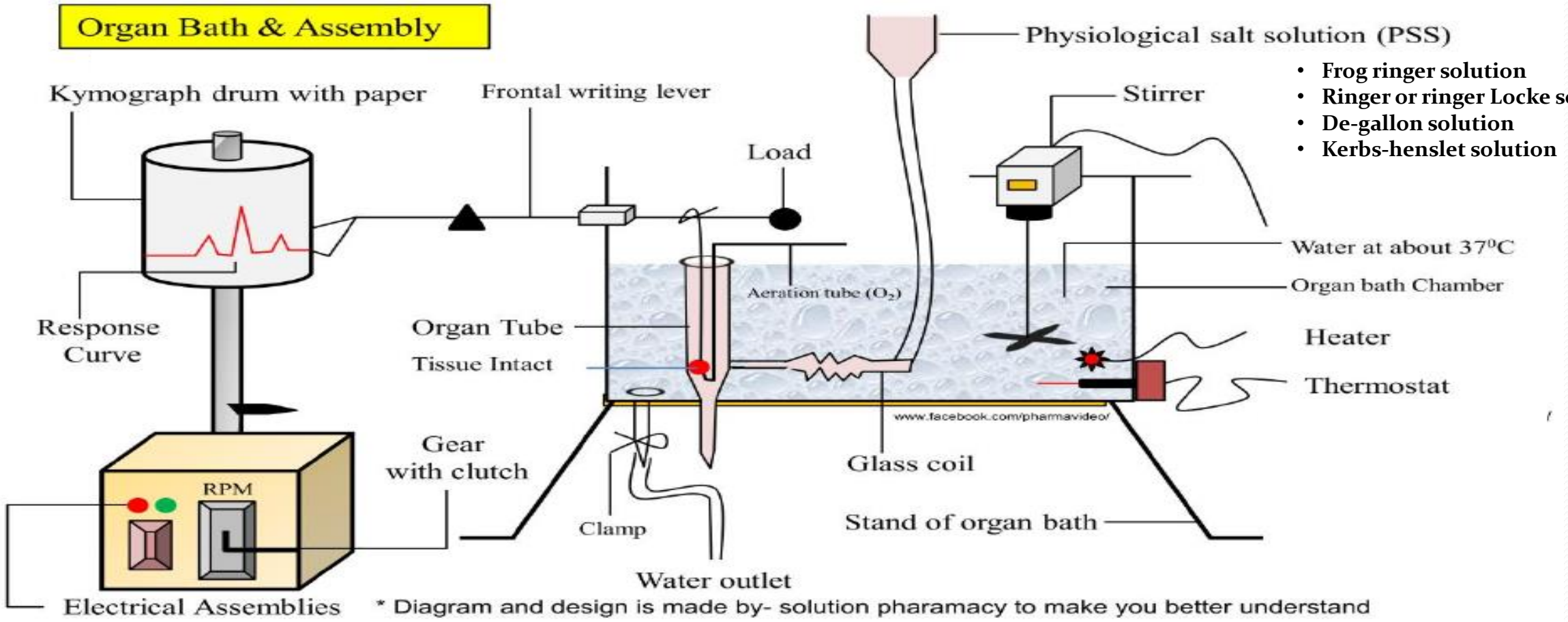
INTRODUCTION

- kymographic organ bath used to put the animal tissue for studying drug action.
- An isolated organ bath assay is a classical pharmacological screening tool to assess concentration-response relationship in a contractile tissue .

PRINCIPLE

- The organ bath is commonly used to investigate the physiology and pharmacology of in vitro tissue preparations.
- Perfused tissues can be maintained for several hours in a temperature controlled organ bath.
- After a suitable equilibrium period the experimenter can begin stimulation of the tissue.
- The tissue reacts by contracting / relaxing and a kymograph is used to measure the results.
- From the experimental results dose-response curves are generated (tissue response against drug dosage or stimulation patoncy)

Components Supplied with Bath.



- Frog ringer solution
- Ringer or ringer Locke solution
- De-gallon solution
- Kerbs-henslet solution

Components Supplied with Bath.

- Bath chamber
- Organ tube
- Glass spiral fluid warming coil
- Pss reservoir
- heater
- Thermostat
- Stirrer or mixer
- Oxygen tube
- Aerator
- Lever
- Loud
- Sherrington rotating drum (kymograph drum)
- Kymograph paper

SIGNIFICANCE

- Record and measure in-vitro tissue responses.
- The most common application of the organ bath assay is the cardiovascular research, using isolated aortic rings, heart tissues (papillary muscles, left ventricles) or arteries.
- For studying gastro-intestinal effects, preparation of ilium and colon are usually used, but also gastric antral muscles and sphincter may be studied.
- Respiratory effects can be studied in isolated tracheal rings, phrenic diaphragm preparations, pulmonary arterial smooth muscles and even lung parenchyma.

SIGNIFICANCE

- Other smooth muscle preparations that are used in organ bath research are urinary bladder strips or prostate.
- In contrast to molecular assay, the complex responses of organ bath assay can be studied.
- In addition, effect of compound with unknown molecular targets can be studied.
- Important tissue-specific expression and modification of molecular targets can be lost in cell culture assays but can be studied in organ bath.
- Organ bath are also ideal for studying responses in specific animal disease models.

How do we use the student organ bath.

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1. Cleaning the organ bath assembly
2. Attaching or arranging all small hooks, clamp and water pipes.
3. Fixing the lever and stick the kymograph paper on rotating drum.
4. Kymograph paper should be either smoked or have to use colour ink at the end of lever.
5. Fill the water into 2/3 portion of organ bath or up to suitable length depending upon the unit of organ bath.
6. Switch on the mains and heater
7. Wash the organ tube with PSS once
8. Fill the PSS into organ bath and hold it.
9. Start providing oxygen by aerator machine
10. Attach the aeration tube into the organ bath
11. Now tie the tissue of isolated organ which you have to study (This process may be modified)

How do we use the student organ bath.

12. Tie the other end of thread into writing lever
13. Attach the lever with rotating drum and wait till resting or constant line appears
14. Inject the drug into organ bath and carefully examine the changes in muscle strength by observing kymograph paper.
15. Release the clamp of organ bath to let the PSS flow outside the organ tube if you want to reduce the strength of dose, if you want to increase the dose, no need to change the PSS. (It is for same drug)
16. For every new drug injection the old PSS must be change.
17. Ensure the temperature of water bath; it should not increase than optimum temperature.

Thank
you